

**Appendix A**

**Responsiveness Summary**



## **Appendix A**

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#### **A.1 OVERVIEW**

Operable Unit (OU) 7-08 is an OU within Waste Area Group (WAG) 7 of the Radioactive Waste Management Complex (RWMC) at the Idaho National Engineering Laboratory (INEL). The unit comprises the Organic Contamination in the Vadose Zone (OCVZ), as described in the Record of Decision (ROD) to which this Responsiveness Summary is attached. A Proposed Plan was released March 28, 1994, with a public comment period from March 31 to April 30, 1994. The Proposed Plan recommended a phased approach using Extraction/Treatment by a Vapor Vacuum Extraction (VVE) system. Under the plan, the existing VVE system would be augmented with additional extraction wells, monitoring wells, and vapor treatment equipment. This Responsiveness Summary recaps and responds to the comments received during the comment period. Generally, the comments reflected a broad range of views, from strong support for the selected alternative to opposition challenging the baseline data used by the agencies to select the selected alternative.

#### **A.2 BACKGROUND ON COMMUNITY INVOLVEMENT**

To initiate the OCVZ investigation, public scoping meetings were held December 9, 10, 11, 12, 1991 in Boise, Moscow, Twin Falls, and Idaho Falls, respectively. Approximately 125 people attended the four meetings. The meetings were designed to involve the public early in the investigation; to explain the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process; and to allow representatives from DOE and INEL to discuss the project, answer both written and verbal questions, and receive ideas and suggestions from the public. The scoping meetings were announced via a fact sheet conveyed through a "Dear Citizen" letter mailed on November 19, 1991, to a mailing list of 5,600 individuals in the general public and 11,700 employees of INEL. On November 20, 1991, the U.S. Department of Energy, Idaho Operations Office (DOE-ID), issued a news release to more than 40 newspaper, radio, and television media contacts. Both the letter and release gave notice to the public that OCVZ documents would be available before the beginning of the comment period in the Administrative Record section of the INEL Information Repositories located in the INEL Technical Library of Idaho Falls, as well as in city libraries in Idaho Falls, Pocatello, Twin Falls, Boise, and Moscow. Additionally, the letter and release notified the public of the various ways in which they could participate in the investigations and decision-making process.

Display advertisements announcing the 30-day public comment period on OCVZ appeared between November 20 and November 27, 1991, in eight major Idaho newspapers: the *Post Register* in Idaho Falls, the *Idaho State Journal* in Pocatello, the *South Idaho Press* in Burley, the *Times News* in Twin Falls, the *Idaho Statesman* in Boise, the *Idaho Press Tribune* in Nampa, the *Lewiston Morning Tribune* in Lewiston, and the *Idahonian* in Moscow. Similar display advertisements reminding the public of the upcoming meetings appeared in each of these newspapers several days preceding each local meeting to encourage citizens to attend and provide oral or written comments. All three media—the "Dear Citizen" letter, news release, and display advertisements—gave notice of the four

public scoping meetings and the beginning of the 30-day comment period on December 4, 1991. Two radio stations in Idaho Falls repeated announcements from the news release to the public at large.

Personal telephone calls concerning the availability of OCVZ documents and public meetings were made to key individuals, environmental groups, and organizations by INEL Outreach Office staff in Pocatello, Twin Falls, and Boise. Calls were also made to community leaders in Idaho Falls and Moscow by INEL Community Relations Program staff in Idaho Falls and Boise.

During the meetings that followed, representatives from DOE-ID and INEL discussed the project, answered questions, and received public comments. Forms for written comments were distributed at the meetings and the audience was encouraged to comment on the project. The comments received during the public scoping period were evaluated and considered as part of the Remedial Investigation/Feasibility Study (RI/FS) process.

Regular reports concerning the status of the OCVZ project were included in the *INEL Reporter* and mailed to those who attended the meetings and who were on the mailing list. Reports appeared in the March, May, July, and November 1992 and January, March, and July 1993 issues of the *INEL Reporter*.

When the investigation was complete, a Notice of Availability for the OCVZ Proposed Plan was published between March 15 and March 20, 1994, in the *Post Register* (Idaho Falls), the *Idaho State Journal* (Pocatello), the *South Idaho Press* (Burley), the *Times News* (Twin Falls), the *Idaho Statesman* (Boise), the *Lewiston Morning Tribune* (Lewiston), and *The Daily News* (Moscow). A second advertisement was placed in the same newspapers several days before each open house or meeting to remind citizens of the opportunity to attend the meetings and provide oral or written comments. Radio stations in Idaho Falls, Blackfoot, Pocatello, Burley, and Twin Falls ran advertisements during the three days before the open houses at the Pine Ridge Mall in Pocatello and the INEL office in Twin Falls.

The Proposed Plan for the remedial action of OCVZ was mailed March 28, 1994, to the 7,000 members of the general public and the 400 INEL employees on the INEL mailing list. Copies of the Proposed Plan and the entire Administrative Record are available to the public in six regional INEL information repositories: the INEL Technical Library in Idaho Falls; INEL offices in Idaho Falls, Pocatello, Twin Falls, and Boise; the University of Idaho Library in Moscow; and the Shoshone Bannock Library in Fort Hall. The original documents comprising the Administrative Record are located at the INEL Technical Library; copies from the originals are present in the five other repositories.

The public comment period on the Proposed Plan for OCVZ was held from March 31, 1994, to April 30, 1994. No requests for extensions were received. On April 13, 1994, a teleconference between the League of Woman Voters of Moscow, the Environmental Defense Institute, DOE-ID, EPA, and IDHW concerning INEL environmental restoration issues was conducted at the request of Moscow area residents. The teleconference consisted of an overview of the proposed plan, questions and answers, and a general discussion of OCVZ issues.

Open houses were held on April 12 and April 14, 1994, in Pocatello and Twin Falls, respectively; representatives from DOE-ID and IDHW attended the events to discuss the project and

answer questions. Mall display sessions were conducted throughout the day of the meeting at each location to provide access to information for individuals unable to attend the public meetings. Public meetings were held April 18, 20, and 21, 1994, in Idaho Falls, Boise, and Moscow, respectively. Approximately 83 people attended the three meetings. Representatives from DOE-ID, EPA Region X, and IDHW were present at the public meetings to discuss the project, answer questions, and receive public comments. Each public meeting was recorded by a court reporter; transcripts of the meetings have been placed in the Administrative Record.

This Responsiveness Summary has been prepared as part of the ROD. All oral comments, as given at the public meetings, and all written comments are repeated verbatim in the Administrative Record for the ROD. Fifteen people submitted written comments on the OCVZ proposal and 12 people gave oral comments at the public meetings. To more fully respond to each issue raised in the comments, DOE divided the comments received into 91 separate comments. The comments received were coded to indicate which response in the Responsiveness Summary addresses the comment. It should be noted that the Responsiveness Summary groups similar comments, summarizes them, and provides a single response. The ROD presents the preferred alternative for the OCVZ at the RWMC, selected in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision for this OU is based on information contained in the Administrative Record.

### **A.3 SUMMARY OF COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD**

Comments and questions raised during the public comment period on the OCVZ Proposed Plan are summarized below. Several questions were answered during the informal question-and-answer period during the public meetings on the Proposed Plan. This Responsiveness Summary does not attempt to summarize or respond to the issues and concerns raised during that part of the public meeting. However, the Administrative Record contains complete transcripts of these meetings, which contain the agencies' responses to these informal questions.

As discussed earlier, the public meetings were divided into an informal question-and-answer session and a formal public comment session. The meeting format was described in published announcements and meeting attendees were reminded of the format at the beginning of each meeting. The informal question-and-answer session was designed to provide immediate responses to the public's questions and concerns. Comments received during the formal comment portion of each meeting were responded to by the agencies in this Responsiveness Summary. The public was requested to provide their formal comments on the Proposed Plan either during the formal comment session of the meeting or in writing before the close of the public comment period. This Responsiveness Summary responds to those public comments that were recorded by the court reporter during the formal comment portion of the public meeting or that were submitted in writing before the close of the public comment period.

Comments and questions on a variety of subjects not specific to the OCVZ Proposed Plan were submitted during the public comment period. The agencies take public comments very seriously and have made every attempt to respond to all comments. Some comments, however, are beyond the

scope of the OCVZ Proposed Plan (i.e., statements of personal belief, favorable comments about DOE operations in other places, offers of technical assistance). While these comments are summarized and grouped at the end of the Responsiveness Summary, the agencies have not attempted to respond to these out-of-scope comments. However, additional information on these topics can be obtained from the INEL Public Affairs Office in Idaho Falls; the local INEL offices in Pocatello, Twin Falls, and Boise; and the Environmental Restoration Information Office in Moscow. Comments and questions regarding community participation were referred to the INEL Community Relations Coordinator and will be addressed during updates to the Community Relations Plan. Formal comments and questions on OCVZ submitted during the public comment period are answered below.

### **A.3.1 Public Participation**

1. **Comment:** One commenter expressed serious distrust for the entire public comment process. The commenter suggested that the three agencies had met in secret and that it is farcical for the public to think it can change what the agencies have already predetermined. (W15-1)

**Response:** Comments received from the public during the scoping meetings and on the Proposed Plan are taken very seriously by the agencies and have shaped the OCVZ project. For example, one commenter suggested using natural venting or barometric pressure as an alternative method of extracting VOCs from the subsurface, which has the potential to save taxpayer dollars. The agencies are pursuing this suggestion and are currently discussing the use of this approach after the completion of Phase I, especially if there are indications that contaminant concentrations have been reduced to levels that no longer threaten the public health or environment. Through active public participation, the public can and very often does change or modify the agencies' decision.

2. **Comment:** One commenter is concerned that this project will be lost in the bureaucratic shuffle and reminded the agencies of the importance of accurate record-keeping. The commenter also wanted more information about whether the project data are being kept in computer form and whether the data is kept in places accessible to the public. (T8-6, T8-8)

**Response:** All sampling data, reports, and project files are kept on electronic media as well as paper copies. Reports are available to the public through the Administrative Record and at the Information Repositories, both of which are accessible to the public during normal business hours. Additional information can be requested through a FOIA (Freedom of Information Act) request filed with the U.S. Department of Energy. It is the agencies' policy to place all information that supports the decision-making processes for the particular operable units in the Administrative Record.

3. **Comment:** Several commenters commended the agencies for their efforts to include the public. Many commenters indicated that they appreciated the opportunity to be involved and asked to be notified about updated information. (T12-1, W1-1, W1-3, W2-2, W9-1, W11-1, W16-3)

**Response:** The agencies appreciate the public's efforts to become involved with these cleanup projects. Everyone who commented will receive a copy of the ROD, which includes this

Responsiveness Summary. Additionally, commenters will receive information on future INEL projects.

### **A.3.2 Risk Assessment**

4. **Comment:** What forces were considered in the model (e.g., gravity, capillary attraction, atmospheric pressure) and the physical phase of the contaminants (e.g., gaseous, liquid, or both)? (W8-2)

**Response:** The forces considered in the risk assessment model (diffusion of the vapor phase, advection of the aqueous phase, and dissolution or phase-partitioning) were those believed to have the most significant impact on the fate and transport of VOCs in the vadose zone. Vapor advection due to density-gradients or barometric pumping, sorption, degradation, and reactions were considered but not included because of their estimated lack of importance and (in some cases) difficulty to implement and verify. During the comprehensive WAG 7 evaluation, these assumptions will be reevaluated. Barometric pumping will be given an especially close scrutiny because of its potential usefulness as a passive remediation technology. More information about the forces considered in the risk assessment model can be found in Section 5.3.1.3 of the remedial investigation (Page 5-31).

5. **Comment:** One commenter asked whether the agencies had allowed for uncertainty. (W13-1)

**Response:** The agencies allowed for uncertainty by conducting an uncertainty analysis as part of the Baseline Risk Assessment (BRA) (See Section 6.1.5 of Volume 1 of the RI report). Uncertainties in the BRA are due to uncertainties in the risk assessment process in general, specific uncertainties in characterizing and modeling the site, and uncertainties associated with accurately describing exposures. The Superfund process of estimating risk does not yield fully probabilistic risk estimates, but conditional estimates given a considerable number of assumptions about exposure and toxicity. The uncertainty factors associated with OCVZ, which include the extent of the vapor plume, source volumes, and moisture contents in the subsurface, are described in detail in Table 6-18 on page 6-61 of the RI report.

6. **Comment:** A commenter asked what correlation exists, if any, between the transport model and the model previously used for water (Schmalz and Polzer, *Soil Science*, vol. 108, no. 1, 1969). (W8-1)

**Response:** It is not known what correlation exists between the transport model and the Schmalz and Polzer model for water movement. However, the transport model was used to simulate the xenon gas injection test conducted in 1960 near Test Area North and reported by Schmalz (1969). The simulation considered vapor diffusion and advection and was successful in recreating the results of the xenon gas injection test. Aqueous advection from natural water movement was not considered due to the short duration of the test and because Xenon-133 has very low solubility in water. Aqueous advection was considered in the OCVZ transport model because of the long time-frame examined and the tendency of the organic compounds to partition into the water.

7. **Comment:** One commenter asked what degree of conservatism was introduced in the risk analysis: 10, 100, or 10,000? The commenter further stated the public should not have to search through pages 6–60 in the RI report for this vital information. (W15-8)

**Response:** Conservatism is introduced into the modeling and risk analysis at various points, making it difficult to estimate the total degree of conservatism. Modeling uncertainty is dealt with by using conservative parameter estimates. The strategy was to use realistic and reasonable parameter values where possible and conservative parameter estimates where there was little supporting data. It is estimated that the conservativeness of the modeling is about an order of magnitude or a factor of 10. Conservatism in the risk analysis is estimated to range from 1 to 2 orders of magnitude. This conservatism comes primarily from uncertainty factors used to account for variation in the general population, extrapolating data from animals to humans, derivation of chronic exposure limits from subchronic studies, exposure parameters, and similar issues. Therefore, the total degree of conservativeness is estimated to range from 2 to 3 orders of magnitude. However, this is not included in the report because of the complexities and difficulty in making this estimate.

### **A.3.3 General Technical Comments**

8. **Comment:** One commenter suggested that the aquifer is comparable to a huge lake without appreciable movement and any infiltration would simply remain there and decompose. (W5-3)

**Response:** Unlike a lake, the area beneath the Subsurface Disposal Area at the RWMC compares more closely with a sponge. Air permeability of the vadose zone plays an important role in the vapor-phase contaminant migration to the air and groundwater pathways. Regional horizontal groundwater flow of the Snake River Plain Aquifer is to the south-southwest at rates of about 1.5 to 6 meters (5 to 20 feet) per day. The RI and baseline risk assessment results indicated that groundwater contamination due to the migration of the vadose zone organic contaminants to the aquifer will present the most significant future risk to human health if no action is taken. The modeling done as part of the RI and the risk assessment predicted that the contaminant plume would not remain in place, but rather travel several miles downgradient of the SDA if the vadose zone is not remediated. The selected remedy will be designed to minimize the migration of contaminants and reduce contaminant concentrations to levels that do not pose a significant threat to human health or the environment.

9. **Comment:** One commenter stated that there was no mention of the driving force that would continue to expand the vapor plume and suggested that the vapors would decrease to zero as evidenced by the 1960 field experiment. (W15-2)

**Response:** Lateral migration or expansion of the plume occurs primarily by vapor diffusion. The 1960 experiment referenced by the commenter involved injecting radioactive xenon gas into the subsurface at Test Area North. The gas concentrations decreased quickly because a relatively small amount of gas was injected. The gas also had a short half-life and decayed fairly rapidly. Thus, the results from the earlier experiment are not readily applicable to the situation at OCVZ.



10. **Comment:** Have any measurable organic contaminants been detected by air sampling at the Subsurface Disposal Area? (W15-3)

**Response:** Very little data exist regarding VOC concentrations in ambient air at the RWMC. VOCs were detected at the Pad A Excavation Area and at the Pad A Subsidence Hole (which are within the RWMC). Carbon tetrachloride concentrations of 17.0 milligrams per cubic meter were recorded at the Pad A Excavation Area and 11.0 milligrams per cubic meter were recorded at the Pad A Subsidence Hole. Grab air samples were collected at the Subsurface Disposal Area in 1987. These samples were collected above and within wellheads to assess worker exposure. The resulting data were not sufficient to evaluate long-term risks to human health either on or off the INEL. The volatile organics carbon tetrachloride, trichloroethylene, chloroform, tetrachloroethylene, 1,1,1-trichloroethane, and 1,1,2-trichloro-trifluoromethane were detected above their respective method quantitation limits at several of the wells. The samples represented an isolated incident and were not used to establish long-term average concentrations. Air monitoring around the RWMC, however, has not detected adverse atmospheric concentrations of VOCs.

11. **Comment:** One commenter wanted to know how long DOE-ID has been monitoring the vadose zone. The commenter asked what changes in the rate of vapor expansion were noted during the 1993 extraction. (W15-4)

**Response:** Vadose zone investigations at the RWMC began in 1960 and were conducted by several organizations, including the U.S. Geological Survey and EG&G Idaho, Inc. Subsurface monitoring is still being conducted as part of a subsurface investigation program that began in 1985. The investigation, which had focused on subsurface geology and hydrology to assess radionuclide migration, was expanded to include VOCs in 1987 (Mann and Knobel 1987). Because vapor phase volatile organics have only been recognized in the Subsurface Disposal Area vadose zone since 1987, the amount of data available and its distribution in the vadose media is less than the amount of data related to radionuclide and inorganic compounds.

Treatability studies are conducted to assess the effectiveness of treatment technologies that may be used at a specific site. The 1993 treatability study conducted at OCVZ evaluated the hydraulic characteristics of the vadose zone and attempted to determine how to optimize the VVE performance. No attempt was made to evaluate the expansion rate of the vapor plume during this treatability study and, thus, the agencies do not know whether there has been a reduction in the rate of vapor expansion. However, based on the quantities of contaminants extracted and treated during the treatability study, it is logical to conclude that the highest VOC concentration areas may have been temporarily reduced.

12. **Comment:** One commenter wanted to know what consideration had been given to the effect of "drying out" (removing moisture from) the vadose zone as a result of the flow of large volumes of air through it. For example, will this phenomenon occur, and if so, to what extent, and will it have a positive or negative influence on VOC fate and transport in the subsurface environment? (W14-5)

**Response:** The selected remedy will have the effect of drawing cleaner air through the vadose zone (from the surrounding uncontaminated subsurface) and will induce VOCs to partition or

separate from water into air. Thus, it is not likely that the selected alternative, Extraction/Treatment by VVE will significantly "dry out" the moisture from the vadose zone.

13. **Comment:** One commenter suggested restarting the existing VVE system instead of leaving it idle while the five additional Phase I extraction/monitoring wells are installed. The commenter argued that approximately 13,832 pounds of VOCs can be removed from below the Subsurface Disposal Area before Phase I is scheduled to become operational. Thus, the commenter believes that the agencies should "just get on with it." The commenter also asserted that restarting the existing system would provide a better return on the public's tax dollar investment. (W14-7)

**Response:** The agencies are not currently considering immediately restarting the existing VVE system because of difficulties associated with the handling and regeneration of contaminant-saturated carbon adsorption beds used during the earlier extraction process. The related disposal problems are one of the reasons that catalytic oxidation (CATOX) is being evaluated as a vapor treatment system. Until the CATOX systems are available, however, the agencies will not be able to begin extraction and treatment. The Proposed Plan includes the use of the existing extraction well and VVE system used (with CATOX modification) in the Treatability Study. By spending the time to pre-plan the remedial action, by locating the most appropriate place for the extraction/monitoring wells to ensure that VOCs are removed from the most permeable zone of the subsurface, and by ensuring that the remedial action is conducted in the safest manner possible, the taxpayers are, in a sense, getting a better return on their dollar.

14. **Comment:** Two commenters stated that using natural venting or barometric pressure would be more cost effective than the Extraction/Treatment by VVE alternative proposed by the agencies. (T1-4, W14-10) Another commenter, however, argued that natural venting would be slower and would take too many years. (T2-2)

**Response:** The agencies are currently considering implementing natural venting or a combination of natural venting and Extraction/Treatment by VVE after Phase I, especially if the results from the Phase I activity demonstrate sufficient reduction in contaminant levels. Originally, barometric pressure to vent contaminants (barometric pumping) was evaluated but it was not considered in the conceptual fate and transport model. The commenter who stated that natural or barometric pumping would remove VOCs at a slower rate than the selected alternative is correct. Therefore, due to uncertainty about the length of time required to reduce contaminant concentrations to safe levels and the potential for ambient air pollution, the agencies decided not to more fully explore this option. Additionally, the agencies did not believe this treatment option would meet the remedial action objective of preventing organic contaminant migration to the groundwater that would result in exceeding acceptable risk levels and/or federal and state maximum-contaminant levels. The natural venting or barometric pressure option may, however, be more fully evaluated during the comprehensive WAG 7 evaluation.

15. **Comment:** One commenter questioned the agencies' characterization of the rate of movement by contaminants from the surface to the groundwater, stating that too much documentation from other sources contradicts the characterization. (T10-3)

**Response:** The agencies agree with the commenter that there is uncertainty in predicting migration rates, especially of volatile organic compounds. Volatile organic compounds are highly mobile due to their ability to exist and move in a vapor state. However, a number of field investigations have been conducted at the RWMC that support the conclusions of the modeling. These investigations included the collection of geologic, hydrologic, and meteorologic data, and sampling and analysis of surficial soil, soil vapor, perched water, and groundwater. The agencies cannot comment on the general statement concerning contradicting documentation mentioned by the commenter, however, the agencies believe predictions of the rate at which contaminants move from the surface to the groundwater are realistic, reasonable, and consistent.

16. **Comment:** One commenter wants to know whether there is a way to automate the process (VVE) to reduce the labor costs involved with the activity. (T8-2)

**Response:** The Extraction/Treatment by VVE system is automated, which is one reason why the agencies selected this as the preferred treatment alternative. The system requires minimal labor hours to operate and maintain. Although monitoring of the system will require additional labor hours, the contractor's use of computerized gas chromatographs will reduce labor hours. Wherever possible, new technology and automated systems will be evaluated and used.

17. **Comment:** One commenter inquired whether there was a way to recover the organic vapor of the solvents and reuse it elsewhere. (T8-3)

**Response:** Organic solvents could be recovered and reclaimed from the vadose zone using the PURIS technology. Unfortunately, no viable use could be identified for the mixture of solvents that would be recovered.

18. **Comment:** One commenter wanted more information about the "hazard" that exists with Texaco Regal oil and whether VVE would work in its removal. (W3-4)

**Response:** Texaco Regal oil is a lightweight machining oil that was used in the late 1960s as a lathe coolant in the foundry at the Rocky Flats Plant near Golden, Colorado. Texaco Regal oil is a mixture of five base oils that were either solvent-dewaxed, paraffin oils, or naphthenic oils. During the process, the lathe coolant was contaminated with carbon tetrachloride and other solvents. The carbon tetrachloride and three other solvents (tetrachloroethylene, trichloroethylene, and 1,1,1-trichloroethane) are the contaminants of concern—not the Texaco Regal oil. Before disposal, the oil was mixed with calcium silicate (an absorbent) to form a viscous, paste-like, green sludge. The solvents, due to their higher vapor pressure, have migrated into the vadose zone in a vapor phase. The Texaco Regal oil is not believed to have migrated from the pits. The purpose of the VVE system is to remove the vapor phase solvents from the vadose zone, not to remove the oils from the pits.

19. **Comment:** One commenter stated that he had yet to see an entity relation diagram or a contact's diagram for a data flow diagram. In other words, he states, what are the inputs, outputs and so forth described? (T8-5)

**Response:** The agencies are not familiar with an entity relation diagram or the terminology used by the commenter. The agencies interpret the comment to question the validity and

usability of the data used as inputs for the results of the RI/FS and Work Plan. Data Quality Objectives were established in the Work Plan (Chatwin et al. 1992) and detailed in Attachment III to the Work Plan. The validation and data usability summary contained in Section 4.6 of the RI presents an evaluation of the data quality supporting the objectives prescribed in the Work Plan for the OCVZ RI/FS. Data Quality Objectives are established to support the overall objective of data collection: to ensure that the information collected for decision-making at the site is of known and adequate quality and is technically sound, statistically accurate, and properly documented. Per EPA guidance, Data Quality Objectives are expressed in quantitative and qualitative terms of precision, accuracy, representativeness, completeness, and comparability.

### **A.3.4 General Comments on the Proposed Alternatives**

20. **Comment:** One commenter wanted a more in-depth analysis of the in-situ bioremediation alternative. This alternative seems to be passed off lightly as being too difficult to use for subsurface treatment, yet it presents a lower cost alternative. (W1-2)

**Response:** A discussion of the bioremediation alternative is contained in the Feasibility Study (See Section 3.2.4 at Page 3–24). One of the reasons the agencies decided not to pursue a more in-depth analysis of this alternative is that no bioremediation studies have ever been conducted in the soil type present at the RWMC (i.e., unsaturated, fractured basalt). This lack of information limits the ability to accurately predict bioremediation performance. To perform such an analysis would take many years and increase the cost of such a remedial action. Additionally, it is possible that vinyl chloride may be formed due to incomplete degradation of TCE. Since vinyl chloride is more toxic than TCE, a thorough evaluation of the potential for vinyl chloride formation under site-specific conditions would be required. The variable degradation rates among the organic contaminants of concern caused by site-specific conditions makes it difficult to predict the effectiveness of this option. Thus, the agencies concluded that the uncertainties associated with the bioremediation alternative made it less preferable than the proven effectiveness of Extraction/Treatment by VVE.

21. **Comment:** Several commenters addressed technology transfer, suggesting that technology developed at environmental restoration sites at the INEL be shared with other DOE sites and private industry and be published in trade publications. (T8-1, W3-5, W14-9, W14-10, W14-11)

**Response:** DOE agrees with the commenters. One of DOE's highest priorities is to promote United States industrial competitiveness through technology transfer. The science and technology developed in DOE research programs, laboratories, and non-laboratory facilities helps form a knowledge base that is one of our country's most valuable national assets. DOE's technology transfer goals include increasing the level of U.S.-based industry participation in DOE research and development, increasing the level of DOE program and laboratory activity in transferring technology, and accelerating the process of transferring technology and knowledge.

Various tools are used to facilitate technology transfer to the private sector. The Environmental Restoration and Waste Management Technology Integration Program has contractual mechanisms by which industry could become involved with ER&WM activities. These include

direct procurement of innovative technologies and research through Program Research and Development Announcements, Research Opportunity Announcements, and cooperative research efforts through Cooperative Research and Development Agreements (CRADAs). ER&WM can also provide assistance to small businesses in areas such as proposal preparation and technology commercialization and business planning. The ER&WM Technology Integration Program also operates a toll-free telephone number (1-800-736-3282) to identify potential matches between private sector representatives (and their technologies) and DOE points of contact, and disseminates information about DOE's R&D programs and associated business and research opportunities.

Environmental restoration technology is also transferred to the private sector through the presentation of papers at environmental remediation and technology conferences held throughout the country. In the past year, INEL scientists and environmental restoration experts presented more than 40 papers at such conferences, which discussed environmental remediation technologies used at the INEL.

22. **Comment:** Two commenters urged the agencies to move forward as soon as possible with implementation of the remedial action. (W3-6, W14-7) Another urged the agencies to start mitigation efforts to head off worse problems in the future. (W4-3)

**Response:** DOE, with EPA and IDHW concurrence, is accelerating remedial action to the extent practical. Based on the positive comments received in support of Extraction/Treatment by VVE and based on the need to remove organics to reduce the threat to groundwater, the agencies have decided to begin drilling of extraction and monitoring wells. Five extraction wells and 10 monitoring wells have been drilled and procurement actions have been initiated to obtain the extraction and treatment systems.

23. **Comment:** Two commenters stated that their preferred alternative was "No Action." (W5-1, W7-4, W15-9) Another commenter questioned why so much activity and cost was associated with the "No Action" alternative. The commenter further stated that "No Action means no action" and that monitoring, sampling, and other activities associated with the "No Action" alternative make the alternative meaningless. (W7-3)

**Response:** The agencies note these commenters' preferences for the "No Action" alternative. However, the "No Action" alternative, which is mandated to be considered by CERCLA and the National Contingency Plan was not considered a viable alternative because the results of the RI and baseline risk assessment indicated that the contamination of groundwater due to the migration of the vadose zone organic contaminants to the Snake River Plain Aquifer will present a significant future risk to human health if no action is taken. Thus, all the alternatives evaluated had to meet the remedial action objective of preventing organic contaminant migration to the groundwater in unacceptable concentrations. The "No Action" alternative did not meet this objective and was not considered further.

The costs associated with the "No Action" alternative are largely associated with a requirement in the National Contingency Plan to monitor every Superfund site at which hazardous substances will remain after the response action. Groundwater monitoring is necessary to detect contaminant concentrations in the Snake River Plain Aquifer.

24. **Comment:** One commenter was concerned that some of the tables and figures used to present technical data were unreadable. Further, the commenter stated that if the computer printouts were more readable the public would have more confidence in DOE's actions. (T8-4, T8-7)

**Response:** Tables and figures used in documents associated with OCVZ are generally used to summarize detailed and complex information. Every attempt is made to make the tables and figures in the Proposed Plan and the Record of Decision as technically accurate as possible while providing information that is understandable by members of the general public. In response to this comment, the ROD was reviewed to identify areas in which the tables and figures could be made more readable and understandable.

25. **Comment:** Two commenters were concerned that special care be taken with all monitoring and extraction wells located in and around the Subsurface Disposal Area. The commenters asked that all wells be properly capped and monitored so that they do not become conduits for contaminant transport into the aquifer. (T6-1, W14-6).

**Response:** The agencies concur with the commenters' concern about wells potentially becoming conduits for contaminants into deeper regions under the Subsurface Disposal Area. Because of this concern, each borehole at the Subsurface Disposal Area will be constructed so that it can be used as either an extraction well or a monitoring well. Extraction wells will be completed only to the 110-foot interbed to draw vapor from above the interbed where the highest VOC concentrations have been detected. Boreholes that are drilled through the 110-foot interbed will be sealed at appropriate intervals to avoid creating a conduit for downward vertical migration of VOCs and other contaminants. Finally, because the sedimentary interbeds appear to impede or slow vertical migration of VOCs, boreholes will not be drilled through the 240-foot interbed. The Snake River Plain Aquifer is located approximately 600 feet below the Subsurface Disposal Area. Additionally, engineering controls will be taken to ensure that the extraction wells used in the selected alternative are properly capped, eliminating the possibility of emissions in excess of regulatory limits.

26. **Comment:** Two commenters suggested using the OCVZ project as a "research platform" to develop and test new technologies for subsurface characterization and modeling, vapor vacuum extraction, and vapor treatment. One person asserted that this would directly support DOE's and EPA's efforts to expand the development of environmental technologies. (W14-8, W15-11) However, another commenter complimented the agencies for "not studying [the project] to death." (T11-1)

**Response:** Using OCVZ as a developmental research project is being considered. However, the agencies all agree that the first priority is to cleanup the site and meet the remedial action objectives. Although Extraction/Treatment by VVE is the preferred option, the contractor will be working with DOE's Office of Buried Waste and Technology Integration Program to continually pursue more efficient and cost effective extraction and treatment technologies. Currently, the INEL has teamed up with DOE's Savannah River Operations Office to conduct vapor extraction tests. These tests will be conducted at the Savannah River site. However, if the tests do not interfere with the INEL's ability to meet its cleanup objectives, additional research and development could be conducted at the INEL on vapor extraction technologies.

27. **Comment:** One commenter questioned the accuracy of the total mass balance used as the basis for the risk assessment. The commenter argued that the impact of this inaccuracy is significant. He requested to see some of the documentation on which the agencies based their figures to assure himself that the numbers are valid. (T10-1) Another commenter agreed that the initial concentrations are extremely crucial and are hard to grasp. (T11-2, T11-4)

**Response:** The agencies agree with the commenters that waste volume and concentrations are extremely important factors in the risk assessment. To ascertain the volume of waste at the site, three waste characterization investigations were conducted for the VOCs at the Subsurface Disposal Area. In performing the waste characterization investigations, waste management personnel at the Rocky Flats Plant were contacted to obtain as much data as possible on quantities of volatile organic wastes that were shipped to the Subsurface Disposal Area. The total volume of used oil, carbon tetrachloride, trichloroethane, trichloroethylene, and perchloroethylene received and the dates of receipt were obtained from the Rocky Flats Plant Waste Management monthly reports. These monthly reports also provided data on the amount of lathe coolant received at the Subsurface Disposal Area. Because monthly reports for 1966 and 1969 were not available, quantities of contaminants shipped to RWMC were estimated based on information contained in the other reports. As a result of these investigations, the amounts of hazardous materials stored or disposed of at the RWMC were quantified and the unique waste characteristics attributable to organic material processes were identified. A detailed discussion of the contaminant inventory is presented in Section 3.2 of the OCVZ Final Work Plan and in Section 4 of Volume 1 of the RI report. Both of these documents are in the Administrative Record associated with this remedial action and are available to the public.

The agencies agree that the accuracy of the "total mass balance" is extremely important for accurate assessment of the potential risk to human health and the environment. That is one reason why DOE went to such measures to quantify the sources of the VOCs in the vadose zone. DOE admits that the data is not 100 percent accurate because of lack of data prior to 1966 and the missing monthly reports for the years 1966 and 1969. However, the agencies feel that sufficient data exists to provide meaningful input into the risk assessment and that any inaccuracies caused by estimating the missing data do not significantly affect the quality of the results of the assessment.

28. **Comment:** One commenter challenged the assumption that institutional controls could be maintained at the remediation site for one hundred years. The commenter cited changes during the last one hundred years as examples of how difficult it is to project what will be happening one hundred years into the future. (T10-2)

**Response:** As part of the human health evaluation for the OCVZ, it was assumed that DOE would continue to operate and maintain the RWMC and prevent unrestricted public access to the RWMC until the year 2092. Institutional controls including restricting land use, controlling public access, posting signs, constructing fences or other barriers, and monitoring the environment are employed and will continue to be maintained at the RWMC. DOE has committed to maintain active institutional controls at all low-level radioactive waste disposal facilities for 100 years following closure. (See DOE Order 5820.2A). While the agencies agree that it is difficult to project what will be happening in 100 years, it is reasonable to assume that DOE (or its successor) will still be operating and maintaining the RWMC in 100 years.

29. **Comment:** One commenter was concerned that some of the input data was unknown (i.e., initial concentrations, time period over which the contaminants are dumped into the pit, reactions with other chemicals) and that other input factors were virtually plucked out of the air (i.e., hydraulic factors, especially porosity and dispersivity). The commenter stated that these inputs are crucial computer inputs which dramatically affect the results; in other words: garbage in, garbage out. (T11-2, T11-3)

**Response:** The agencies do not contend that this modeling is without any uncertainty. As noted by the commenter, there is a direct relationship between the uncertainty in the model and the amount of historical data available. The source of the contamination observed in the vadose zone below the trenches and disposal pits is documented through historical data from the contaminant inventories (See Response to Comment No. 22). Additional basis for input data into the fate and transport model were obtained from the Radioactive Waste Management Information System (RWMIS), previous waste characterization activities, and waste inventories of the materials disposed at the Subsurface Disposal Area. Parameters for the RWMC vadose zone VOC transport model included thickness, porosity, saturation, effective air porosity, and tortuosity factors. These parameters are based on previous studies and on actual data taken from in and around the RWMC. The value for porosity was estimated from results of analyses conducted on core samples for the surface sediments, interbeds, and basalt flows at the RWMC down to the 240-foot interbed. Saturation values were estimated using results from analyses conducted on vesicular basalt samples. Dispersivity values were based on analysis of contaminant transport at a nearby INEL facility and checked against ranges reported in relevant literature. Other assumptions used for the development of the transport model are presented in Section 5.3.1.3 of the RI report. As additional data are collected, valuable information on rates and direction of contaminant movement will increase the accuracy of the model and decrease the uncertainty of model predictions because less reliance is placed on estimating past releases.

30. **Comment:** One commenter stated that the alternatives for handling contaminants in the vadose zone under the RWMC should not include Alternatives 0 or 1. The commenter felt that these alternatives were not acceptable because an earthquake may shift the earth and/or open a direct path of flow to the Snake River Plain Aquifer. (W6-1) Another commenter, however, asked that the first alternative (capping) be given additional consideration, particularly in regard to the order of magnitude of the added cost of the preferred alternative. (W8-3)

**Response:** The agencies agree that Alternatives 0 or 1 are less protective than the selected alternative, although not because of the catastrophic earthquake scenario envisioned by the commenter. Alternative 0 (the "No Action" alternative) was not chosen because an unacceptable risk remained to both human health and the environment. Alternative 1 (Containment by Capping) also was not chosen for the same reason. Even with a cap in place, organic contaminants would continue to migrate laterally and vertically in the vadose zone, primarily in the vapor phase. However, capping would limit the contact of water with organic contaminants at shallow depths; thus, migration of organic contaminants dissolved in infiltrating moisture might decrease.

31. **Comment:** One commenter stated that it is not possible to achieve zero contamination at any practical cost and that there is no need to do so. The commenter further stated that carbon



tetrachloride, trichloroethylene, tetrachloroethylene, and 1,1,1-trichloroethane contaminants have been with us for years and haven't been shown to be toxic at low levels. (W16-2)

**Response:** The agencies agree that it is impossible and unnecessary to eliminate all the organic contamination from the subsurface. It is also true that the contaminants of concern have been around for a long time and are not toxic at concentrations below the MCLs.

### **A.3.5 Commenter Agreed with Selected Alternative**

32. **Comment:** Several commenters indicated their agreement with the preferred alternative selected by the agencies. The preferred alternative, Extraction/Treatment by VVE, was recognized as presenting the least risk to workers and the public and as being the most cost effective and protective alternative that prevents organic contaminants from migrating to the groundwater, which would result in groundwater contaminant concentrations exceeding acceptable risk levels. (T1-1, T1-3, T2-1, T2-4, T2-5, T5-1, T7-1, T9-1, W3-1, W4-1, W5-2, W9-1, W10-1, W12-1, W14-1, W16-1, W16-3)

**Response:** DOE, EPA, and IDHW agree that Alternative 2, Extraction/Treatment by VVE, is the alternative that best meets the remedial action objectives and the nine evaluation criteria identified under CERCLA. A long-term groundwater and soil vapor monitoring program will ensure that this selected remedy will be protective of human health and the environment.

33. **Comment:** One commenter stated that VVE has been definitively shown to be effective at removing vapor-phase VOCs from the subsurface environment and that it is a fairly mature remediation technology (fairly high reliability of performance). The commenter further stated that CATOX is a logical choice for destruction of VOCs that have been removed from the subsurface. (W14-2)

**Response:** The agencies agree with the commenter's statement.

### **A.3.6 Commenter Disagreed with Selected Alternative**

34. **Comment:** One commenter stated that it didn't make sense for agency representatives to justify spending his tax dollars by claiming to save lives when the agencies didn't know where the lives are that the agencies claim they're impacting. The commenter continued by stating that he didn't believe the agencies had done their homework. (T3-1) Another commenter stated that there was too much concern over highly improbable happenings. (W5-4)

**Response:** The results of the Human Health Evaluation (HHE) conducted as part of the Baseline Risk Assessment showed that the organic contamination present in the vadose zone, if not addressed by the selected alternative or one of the other alternatives, could migrate to the Snake River Aquifer and contaminate the groundwater. Future groundwater users would then be at risk. The agencies believe that implementation of the VVE Extraction/Treatment system will remove the risk posed to future groundwater users.

The agencies are not asserting that the results of the HHE can predict with 100 percent accuracy the exact risk to the future groundwater users. The agencies do believe, however, that sufficient information has been collected and evaluated to make reasonable estimates on the human health risks posed by the organic contamination in the vadose zone.

While the probability of a future resident using groundwater pumped from the vicinity of the RWMC may seem improbable to some, CERCLA and the NCP require the agencies to assess this risk as part of the HHE. It is true that the estimates of carcinogenic and noncarcinogenic risks are based on conservative assumptions associated with both the fate and transport modeling and the risk assessment. The conservative assumptions used in the fate and transport modeling and the risk assessment compensate for the uncertainty inherent in assessing the risks to human health and the environment.

### **A.3.7 Other Comments on the Selected Alternative**

35. **Comment:** One commenter noted that there are commercially available, trailer-mounted units that should be more cost effective when compared with in-house design and construction. (W14-3)

**Response:** The agencies plan to employ commercially available VVE systems as part of the selected alternative at this site. Several manufacturers supply modular VVE/CATOX units equipped with a fan, a catalytic oxidation chamber, instrumentation, an exhaust stack, and housing. These units are compact, require very little operator interface, and are cost effective for large-scale treatment of vapor-phase contaminants, such as those present in the vadose zone at the RWMC. Any modifications to these units (in-house design) will involve the adaptation of these pre-fabricated systems to meet the site-specific requirements at the RWMC.

36. **Comment:** One commenter stated that contrary to what was presented in the Proposed Plan, wastes would be generated under Alternative 2 (i.e., catalytic waste, hydrochloric acid and/or chloride salt, and particulate matter collected by the HEPA filters). (W14-4)

**Response:** The commenter is correct in stating that wastes or residues will be produced by the vapor treatment system. However, under Alternative 2 with Extraction/Treatment by VVE as the selected treatment alternative, it is expected that residual treatment wastes would not be generated in quantities above regulatory limits of concern. Because such low concentrations of VOCs are associated with the vadose zone at the RWMC, catalysts are not expected to be changed frequently. At sites that have used catalytic oxidation for similar types of contamination, catalysts must be changed every two years; however, the catalysts can be disposed of as solid (not hazardous) waste. Because the results of the remedial investigation indicated no radionuclide contamination present at OCVZ, no high efficiency particulate air (HEPA) filters are required as part of the extraction and treatment system. Although the commenter is correct in stating that hydrochloric acid would be formed during catalytic oxidation, the quantities generated are below regulatory limits of concern. This small amount of waste may require further treatment through neutralization. If necessary, caustic scrubbing systems could be installed at each treatment location. The scrubbing system would produce neutral pH, low-concentration salt-water solutions that can be discharged to a publicly owned treatment works or to surface drainage.

37. **Comment:** One commenter stated that Extraction/Treatment by VVE should be initiated in the highest concentration areas and that limits should be placed on VVE operations. The commenter believed that the agencies should not attempt to remove contaminants to minuscule levels only detectable by sophisticated instrumentation. (W3-2, W3-3)

**Response:** The agencies agree with the commenter. The selected alternative will be centered in those areas with the highest concentrations and will remove and destroy VOCs to the targeted cleanup goal of 30–200 parts per million volume for carbon tetrachloride. The agencies believe that such a cleanup goal will meet the remedial action objective of preventing organic contaminant migration to the groundwater in levels that pose a threat to human health or the environment.

38. **Comment:** One commenter suggested incorporating some flexibility into the plan as it will almost certainly have to be modified at least slightly as the activity proceeds. (W13-2)

**Response:** The selected alternative, Extraction/Treatment by VVE, allows for three possible phases of clean-up activity over a 6-year period. One of the primary reasons the agencies chose a phased approach was to allow for the uncertainties involved with this project. The complexities of the subsurface environment and uncertainty associated with the modeling make it difficult to predict how many wells will eventually be needed. Thus, the agencies have incorporated sufficient flexibility to add more extraction wells if, after Phase 1, contaminants levels do not appear to be decreasing in sufficient amounts. Conversely, the selected alternative also allows for a lower-keyed approach (i.e., natural venting) if, after Phase 1, contaminant levels appear to have been decreased to safe levels.

39. **Comment:** One commenter stated that there was no indication of the amount or percentage of VOCs expected to be removed or even a goal for the activity. The commenter asserted that "believing you will remove the most significant concentration" is inadequate. (W15-7)

**Response:** The targeted cleanup goal from carbon tetrachloride ranges from 30 to 200 parts per million volume depending on the depth within the vadose zone. Other vadose zone contaminants have similar goals. The selected alternative will be designed so that the remedial system meets these goals. The goals have been established so that vadose zone contaminant concentrations will result in groundwater contaminant concentrations that meet the remedial action objective.

A treatability study was performed as part of the clean-up activity to assess the effectiveness of treatment technologies that may be used as remedial alternatives on site waste. The treatability at OCVZ demonstrated that Extraction/Treatment by VVE can reduce vadose zone organic contaminant concentrations. Based on the results from the treatability study, the agencies believe an array of vapor extraction wells at selected locations in the RWMC will effectively reduce contaminant concentrations in the vadose zone to acceptable levels.

40. **Comment:** One commenter stated that in previous studies, suggestions had been made to introduce cold air down the wells to freeze the moisture in the wells to prevent downward migration of water carrying contaminants. (T1-2)

**Response:** Introducing cold air during the winter to freeze moisture and possibly prevent or slow downward migration of dissolved contaminants was not examined in the feasibility study because it is an unproven and undemonstrated technology. If it were possible to prevent downward migration of water, VOC contamination reaching the aquifer would be reduced. However, the contaminants would still reach the aquifer as vapors.

### **A.3.8 Funding, Budgeting, and Scheduling**

41. **Comment:** Several commenters were concerned about the cost of the preferred alternative. Most felt that the agencies were spending too much money. One commenter stated that no business would recommend spending \$13–67 million to remove a marginal threat to public health and that he would rather see his taxes spent on saving lives (e.g., Boron Neutron Capture Therapy). However, two people stated that the agencies should err on the side of safety and spend whatever is needed to protect the aquifer and public health. (T4-1, T7-2, W2-1, W15-5, W15-12)

**Response:** In these tight budgetary times, all the agencies share the commenters' concerns regarding the amount of money spent on remedial actions. The cost estimate of approximately \$12–32 million associated with the selected alternative includes direct and indirect costs associated with construction and operations and maintenance, and post-closure costs for long-term monitoring. Contingency costs were included for each of the three primary cost elements (construction, operations and maintenance, and annual post-closure monitoring). Contingency costs are generally reduced as details of the design for a particular remedial action are refined.

The cost estimates provided in the Proposed Plan are rough estimates (i.e., -30% to +50%) and are given for comparison purposes only. Cost estimates for sampling and monitoring activities will be provided in greater detail in the Remedial Design phase, which follows the ROD. Costs may appear high because overhead rates with the management and operations contractors and general and administrative rates are all factored into the ultimate cost estimate. The administrative costs associated with federal cleanup sites tend to be higher than those associated with private industry sites.

With an ever-shrinking federal budget, a number of measures are being taken to better manage the direct and indirect costs associated with DOE remedial actions. [At the INEL, a 5-year consolidated contract was recently awarded that is designed, in part, to reduce the levels of bureaucracy at the facility.] One cost-saving measure specific to OCVZ was selecting a phased approach to the action allowing agency decision-makers the flexibility to reduce the scope of the project if, following an evaluation of the implemented remedy (approximately two years after implementation), the agencies conclude that indications from monitoring shows that the vadose zone contamination is sufficiently reduced to prevent federal and state maximum contaminant levels from being exceeded in the aquifer. If that conclusion is reached, the agencies may decide to shut down the system or shift to a passive system.

42. **Comment:** One commenter noted that the agencies must obtain funding every budget period to allocate to this project. The commenter further noted that Alternative 2 has a good chance of getting funded because it can be demonstrated to work. (T2-3, T2-4).

**Response:** DOE has allocated and forecasted funding for the OCVZ project and fully expects funding to be available for the duration of this project. However, as with all government moneys, these funds are subject to congressional appropriations and oversight. This fact may potentially influence the funding for OCVZ each fiscal year.

43. **Comment:** One commenter stated that inadequate justification has been made to accelerate this applied experiment over a 2-year period. (W15-10)

**Response:** Extraction/Treatment by VVE is a proven and well-established remediation technology to recover vapor phase organic contaminants from subsurface soils. Based on the results of the treatability study, which proved that Extraction/Treatment by VVE would be effective for the removal of organic contamination in the vadose zone and on the generally positive public support for the project, the agencies decided to implement Alternative 2 as the selected alternative. After evaluating the results from Phase I (lasting approximately two years) a decision will be made as to the level of activity necessary to ensure protection of human health and the environment. If, after Phase I, the remedial action objective has been met (reduction of contaminant levels so that organic contaminant migration to the groundwater will not result in groundwater contaminant concentrations exceeding acceptable risk levels and/or federal and state maximum contaminant levels), then a decision will be made about the level of remedial activity needed during Phase II (i.e., reduce/expand the number of extraction wells, use natural venting, or use a combination of natural venting and Extraction/Treatment by VVE).

### **A.3.9 Comments Deemed Beyond the Scope of the OCVZ ROD**

Comments and questions on a variety of subjects not specific to OCVZ were received during the public comment period. Those subjects included editorial comments concerning language in the Proposed Plan, statements of general distrust for the DOE actions, offers to provide technical assistance on the project, statements concerning past work at the INEL, personal preferences on how taxpayer money should be spent. These out-of-scope comments are not responded to in this Responsiveness Summary. Additional information on these unrelated subjects can be obtained from the INEL Public Affairs Office in Idaho Falls or at the local INEL offices in Pocatello, Twin Falls, and Boise.

**Appendix B**

**Public Comment/Response List Index**



## **Appendix B**

### **Public Comment/Response List Index**

The Public Comment/Response List Index was created to enable commenters and other interested persons to locate the agencies' responses to individual public comments. All oral comments, as given at the public meetings, and all written comments, as submitted, were typed into the attached index. Each comment was then subdivided and assigned a comment code. The codes indicate whether the comment was either written (W code) or taken from the public meeting transcript (T code). The agencies tried to divide comments according to specific concerns, issues or points made by the commenter.

Sixteen people submitted written comments (comments W1-W16) and 12 others gave oral comments at the public meetings (comments T1-T12). Copies of oral and written comments annotated with their respective comment codes are located in the Administrative Record.

To locate a response to a specific individual's comments, look up the last name of the individual, identify the specific comment you are looking for, then turn to the comment number or page indicated in the Responsiveness Summary.

If, after reviewing the annotated comments in the administrative record, a reader wishes to locate a response to a specific comment, he/she can use the comment code to locate a response as well. The reader should identify the comment code in the index, look up the comment and page number of the response then turn to that page of the Responsiveness Summary.

Comments involving multiple issues were further subdivided and answers may appear in more than one place in the Responsiveness Summary. This was done for only five of the 95 comments.



**PUBLIC COMMENTS RECEIVED ON THE  
ORGANIC CONTAMINATION IN THE VADOSE ZONE  
DURING THE 31 MARCH-30 APRIL 1994 COMMENT PERIOD**

| Code | Response Number | Commenter        | Comment   | Page Number                   |
|------|-----------------|------------------|---|-------------------------------|
| NC   | NA              | Jack Barraclough | <p>This is an interesting project to me because I first started studying the burial ground about 30 years ago at the RWMC. And along the studies, we defined the geology of which they're still using and had a feeling for what to do with this waste that's been placed there.</p> <p>In 1980, we looked for organic contaminants. We looked in the parts per million range and couldn't find them. In 1987, they were detected in the parts per billion range.</p> <p>The vapor vacuum extraction is a very exciting project, and it's one that Dr. Dave Allman—about 10 years ago, Dr. Dave Allman and I recommended it, but we had a little bit different concept where we'd use the natural breathing and venting by using wells as a short circuit and using the changes in barometric pressure as the pump and then filter the air.</p> | Out-of-Scope/Not Responded To |
| T1-1 | 32              | Jack Barraclough | I think the system that they've developed now is superior to our original concept.  | A-17                          |
| T1-2 | 40              | Jack Barraclough | [W]e wanted to introduce cold air during the winter to freeze what moisture was in there to prevent downward migration of water carrying contaminants.  | A-20                          |
| T1-3 | 32              | Jack Barraclough | And I think the analysis is good and I think the modeling studies are good. And I support the preferred alternative, and I think it's probably the most cost-effective and the most dynamic.  | A-17                          |
| T1-4 | 14              | Jack Barraclough | I would suggest that you do seriously consider natural—using the changes in barometric pressure as more cost effective, maybe not now, but in the future.   | A-10                          |
| T2-1 | 32              | C. E. White, Jr. | I think the alternative that Jack is talking about is going to be the one.  | A-17                          |
| T2-2 | 14              | C. E. White, Jr. | I just—I just don't think that we—with the barometric pressure, it's going to take too many years to do it. I think it's going to be a slower process to do it, Jack. I don't know. You may not agree with me, but I think it's going to be a lot slower.   | A-10                          |

**PUBLIC COMMENTS RECEIVED ON THE  
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| <b>Code</b> | <b>Response Number</b> | <b>Commenter</b> | <b>Comment</b>  | <b>Page Number</b> |
|-------------|------------------------|------------------|---|--------------------|
| T2-3        | 42                     | C. E. White, Jr. | And we will have to—the government will have to come up with money every period, every budget period, to allocate to this.  | A-22               |
| T2-4        | 32, 42                 | C. E. White, Jr. | [I]f we choose the No. 2 one, which is the pump, I think we've got a good chance of getting it funded because I think it will work and I think we can prove it will work.   | A-17, A-22         |
| T2-5        | 32                     | C. E. White, Jr. | I agree also that that would be the alternative to accept.  | A-17               |
| T3-1        | 34                     | Bob Belveal      | It doesn't—it doesn't make sense to me for you folks to stand up here and justify spending my tax dollars doing this for the purpose of saving lives when you don't know where the lives are that you're impacting. I don't think you've done your homework.  | A-18               |
| T4-1        | 41                     | Nicole LeFavour  | I'm concerned that possibly the money being spent is perhaps—I guess I should phrase this better. Perhaps you're being cautious with the money you're spending, and I guess I just want to make sure that there isn't the possibility that you need to do perhaps the \$59 million treatment. I hoped that you will err on the side of the cautious. And I think it looks good.                     | A-21               |
| T5-1        | 32                     | John Anderson    | I really feel that your vapor extraction is a correct method. I'm very familiar with vapor extraction and this is probably as cheap—you're going to get the best bang for your dollar right there.  | A-17               |
| T6-1        | 25                     | Fritz Bjornsen   | I guess my concern would be simply that during the process, all care be taken that the monitoring wells and the vapor vacuum extraction well be properly capped and monitored to prevent increased migration both of the solvents and potentially other problems—other things existing in the soil at the RWMC that might find an easy pathway to the aquifer through the wells that are being dug. | A-14               |
| T7-1        | 32                     | Walt Hamson      | It looks to me like you've done a pretty thorough job.  | A-17               |
| T7-2        | 41                     | Walt Hamson      | Personally, it seems to me that the Preferred Alternative looks pretty reasonable, as long as you hold kind of close to that 12 instead of the 32.  | A-21               |

**PUBLIC COMMENTS RECEIVED ON THE  
ORGANIC CONTAMINATION IN THE VADOSE ZONE  
DURING THE 31 MARCH-30 APRIL 1994 COMMENT PERIOD**

| Code | Response Number | Commenter     | Comment   | Page Number |
|------|-----------------|---------------|---|-------------|
| T8-1 | 21              | Walter Betway | I mentioned earlier the concern for technology transfer, and I think that still should be a very high priority and I don't think it's really being addressed.   | A-13        |
| T8-2 | 16              | Walter Betway | We're also not dealing with costs in a more detailed breakdown. If you're going to run the program two years and say it goes to three, can we work at automating this to reduce the labor cost and to let it do its thing even if it takes five or ten years without high labor costs?  | A-11        |
| T8-3 | 17              | Walter Betway | We need to look at can we recover this organic vapor solvent and reuse it elsewhere as feed stock for something else? The reason being is that you may not have a lot here, but there is a lot in other dumps elsewhere throughout the world.   | A-11        |
| T8-4 | 24              | Walter Betway | <p>And this reinventing the wheel does bother me a bit. I still think that, like you say, I don't trust computers, and just because the computer says this, I can also program computers to make any answer I want. And this is where I need—feel, I should say, that software documentations should be readable and these programs should be described as what they do much more in the public domain. They're right now, as far as I know, almost no indication of this in the INEL Repository, or at least references to such. Part of the data processing which is not unique to INEL, it's throughout the whole computer industry.</p> <p>We're taking too much in faith that the computer model is accurate or even meaningful. I don't even know what the variables are that go into it or come out of it. All I can do is guess. I think that's unfair and also make is useless for other projects in the future.</p> | A-14        |
| T8-5 | 19              | Walter Betway | I have yet to see an entity relation diagram, that's how to date and relate to each other. A contact's diagram for a data flow diagram, I've yet to see one of those anywhere mentioned. In other words, what are the inputs, outputs, and so forth described.  | A-12        |

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| <b>Code</b> | <b>Response<br/>Number</b> | <b>Commenter</b>   | <b>Comment</b>  | <b>Page Number</b> |
|-------------|----------------------------|--------------------|---|--------------------|
| T8-6        | 2                          | Walter<br>Betway   | So I'm looking at this equipment, whatever you're doing on this, to be useful and transferable and do a good job here, rather than do a, shall we say, a least effort and then hopefully forgotten. You known, we did our project, we cleaned it up; but it's all lost like many of the other files and piles of reports and is unusable by anyone else. So record-keeping is still a critical area.  | A-6                |
| T8-7        | 24                         | Walter<br>Betway   | And I'd like to see those computer printouts, definitely as I mentioned before, be made much more readable. It's a failing that's not professional in my opinion. It's much—I think hackers even can do better jobs on some of these printouts. And as you do such things, it will give the public confidence by making these things more readable rather than, shall we say, questionable because the AEC—or Atomic Energy Commission or the DOE now—has in the past, hid so much in secrecy or in records that are questionable in value. | A-14               |
| T8-8        | 2                          | Walter<br>Betway   | And I'd like to see where its referenced to where the data records are being kept in your Information Repository in computer form. Do you even have one, or is this kept in somebody's desk, third drawer down next to the garbage can? These are the concerns I would like to see INEL succeed and has to be dealt—these problems have to be dealt with.   | A-6                |
| T9-1        | 32                         | Kent<br>Martin     | I support any effort in site remediation at any facility in the United States. And I'm very please to see that Idaho has taken the time and effort, because it's very, very difficult to do all this. And I commend all of your on your effort to take on this monumental task. So, I support you one hundred percent.  | A-17               |
| T10-1       | 27                         | Chuck<br>Broscious | I'm not convinced that the total mass volumes that you all are using as your base for what was disclosed of there is accurate. And in terms of the ramifications, if that number is not correct and how that would impact your risk ranges and whatnot is significant. And I would like to see some documentation on what you base those figures on, you known, to assure me that you're working from numbers that are pretty solid.  | A-15               |

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| T10-2       | 28                     | Chuck Broschious | In terms of maintaining institutional control for 100 years, I think it's important to stop and think about what was going on in 1894. This was decades before even the automobile. This was before paved highways and this was during the time when people road the trains around, a lot of them were wood fired. So, in terms of projecting, you known, another hundred years out there and making assumptions that there's going to be something that we call the United States of America is being very presumptuous. And I think we need to be thinking about these things when we just lay these projections out there. | A-16               |
| T10-3       | 15                     | Chuck Broschious | And again, I do not have a lot of faith in your characterization of how fast contaminants move from the surface to the groundwater, because I've had too much documentation, other geologists, hydrologists, and in and out of Department of Energy, Atomic Energy Commission, Energy Resource and Development Agency. You know, it doesn't—you know there's too much challenge in documentation.   | A-11               |
| T11-1       | 26                     | Neil Farmer      | I see a few positive aspects and a few negative aspects. One positive comment that I'd like to make it towards people working on this problem, that at least we're coming to a conclusion for a remedial effort that is—at least we aren't studying it to death as we are with the salmon issue.  | A-15               |
| T11-2       | 27, 29                 | Neil Farmer      | Some of the negative parts of the presentation is of course some of the data given by computer programs as mentioned. I just go through with an assignment basically doing the exact same thing with a different program. And it is true, initial concentrations are extremely crucial, over what time period they are dumped into a pit, and the reactions with other chemicals. So this—and a lot of this is completely unknown.  | A-15, A-16         |

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| T11-3 | 29              | Neil Farmer  | And that's not even to mention the hydrologic factors of the aquifer, namely effective porosity, spurgivity, a good many others, that most, even well experienced and seasoned hydrogeologists most of the time have to virtually pluck out of the air because there is no hard data for that. And those are crucial inputs into the computer programs which will dramatically affect program, garbage in and garbage out.   | A-16        |
| T11-4 | 27              | Neil Farmer  | What I'm trying to say is the input data is in essence so hard to get a firm grasp on the—it's very difficult to have much reliance on the output of the computer program. But that's not to say that there are completely inadequate. They're only as good as the input in, and that's personal experience and from conversations with seasoned hydrogeologists, I suppose namely on the University faculty.  | A-15        |
| T12-1 | 3               | Joe Lance    | I'd like to thank you for the opportunity at least to hear more about what the problem is. Having worked the last 20 years or more in the Hagerman Valley with fisheries' people and irrigators and agriculturists, I understand the importance of this aquifer. I guess my only comment would be I appreciate the opportunity to hear it, and the opportunity to respond. I wish I'd knew more bout it such as many of the people here, but I have learned. And I would like to apologize for the mistakes that my generation made by drilling holes into the aquifer, and maybe through some of this cleanup, this won't happen, but we at least left it to our kids to clean up. I appreciate the opportunity to be here. | A-6         |
| W1-1  | 3               | Walt Hampson | Excellent communication—[I] have seldom seen more accurate and thorough technical composition in a general publication.  | A-6         |
| W1-2  | 20              | Walt Hampson | [I] would like to see more in-depth analysis of the In Situ Bioremediation Alternative. It seems to have been passed off a little lightly as too difficult for this subsurface. However <i>if not</i> too difficult—it would certainly be a much lower cost alternative.   | A-12        |
| W1-3  | 3               | Walt Hampson | Thanks for this opportunity to comment and good luck!  | A-6         |

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| W2-1 | 41              | Phyllis Jones    | We need to clean up the problems of the water regardless of cost and ASAP as a federal project and maybe helped by the state.   | A-21                          |
| W2-2 | 3               | Phyllis Jones    | Please keep us updated as to future information. Thanks.  | A-6                           |
| W3-1 | 32              | Rodger F. Colgan | I support your recommended Alternative 2.   | A-17                          |
| W3-2 | 37              | Rodger F. Colgan | There should be limits for effective VVE operation, not to remove contaminants to levels of detection for sophisticated instrumentation.  | A-19                          |
| W3-3 | 37              | Rodger F. Colgan | Activity should be initiated in the highest concentration areas.  | A-19                          |
| W3-4 | 18              | Rodger F. Colgan | I am not aware of what "hazard" exists in <i>Texaco Regal Oil</i> and if VVE would work in its removal.   | A-11                          |
| W3-5 | 21              | Rodger F. Colgan | The technology for VVE should be common, simple, reasonably cost effective, and shared in trade publications such as <i>Environmental Protection</i> and <i>T.N.E.J.</i> , etc. | A-13                          |
| W3-6 | 22              | Rodger F. Colgan | The implementation should begin as soon as possible.  | A-13                          |
| W4-1 | 32              | Andy Holderreed  | The outlined plans would appear to be reasonable.   | A-17                          |
| W4-2 | NC              | Andy Holderreed  | Plans allow for more well drilling and testing to determine the extent of the remediation.  | Out-of-Scope/Not Responded To |
| W4-3 | 22              | Andy Holderreed  | I think we must get on with efforts to mitigate the waste problems to head off worse problems ahead.  | A-13                          |
| W5-1 | 23              | Warren Barry     | [If we were voting,] I would favor Alternative 0 and simply monitor the material at a great saving in cost to all.  | A-13                          |
| W5-2 | 32              | Warren Barry     | My second choice would be Alternative 2, VVE Phase I. This should satisfy all <i>reasonable</i> objections and provide an acceptable solution.                                  | A-17                          |
| W5-3 | 8               | Warren Barry     | My understanding the aquifer is comparable to a huge lake without appreciable movement. Any infiltration would simply remain there and decompose.                               | A-8                           |
| W5-4 | 34              | Warren Barry     | Too much concern over highly improbable happenings.   | A-18                          |

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| W6-1 | 30              | Willard Adams    | Alternatives for handling contaminants in the Vadose Zone under RWMC should not include Alternative 0 or 1. They do not cut it if one was to consider an earthquake that may shift the earth and/or open a direct path of flow to the Snake River Plain Aquifer.        | A-17                          |
| W7-1 | NC              | R. Ham Hamilton  | The last sentence of "Alternative 0: No Action" should be the last sentence of Remedial Action Objectives.  | Out-of-Scope/Not Responded To |
| W7-2 | NC              | R. Ham Hamilton  | Move the 4.1 million from page 11 to page 10.   | Out-of-Scope/Not Responded To |
| W7-3 | 23              | R. Ham Hamilton  | "No Action" means to do nothing in good English.  | A-14                          |
| W7-4 | 23              | R. Ham Hamilton  | After all your blather—leave everything be: Monitor once each 10 years with improved technology.  | A-13                          |
| W8-1 | 6               | Bruce L. Schmalz | What correlation exists, if any, between the transport model and that previously used for water (Schmalz and Polzer, <i>Soil Science</i> , vol. 108, no. 1, 1969)?  | A-7                           |
| W8-2 | 4               | Bruce L. Schmalz | What forces were considered in the model (e.g., gravity, capillary attraction, atmospheric pressure, etc.) and the physical phase of the contaminants (e.g., gaseous or liquid or both)?  | A-7                           |
| W8-3 | 30              | Bruce L. Schmalz | It is this commentator's intuitive opinion that the first alternative be given additional consideration, particularly in regard to the order of magnitude of the added cost of the preferred Alternative 2.   | A-17                          |
| NC   | NC              | C. E. White, Jr. | I have read all of the data available on your proposed method of extraction have had some one-on-one discussions with Reuel Smith (among others) and . . .  | Out-of-Scope/Not Responded To |
| W9-1 | 3, 32           | C. E. White, Jr. | [I]t is my feeling that you have a workable and safe remediation procedure. Thanks for the opportunity to comment.  | A-6, A-17                     |
| NC   | NC              | David H. Nedrud  | In December of 1992, our company started a Vapor Extraction project for a Nevada engineering firm. The project involved a leaking UST with unleaded gasoline. From our air and water well monitoring, we have seen dramatic decreases in contamination levels in soils. | Out-of-Scope/Not Responded To |



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| W10-1       | 32                     | David H. Nedrud  | No doubt in our minds that Vapor Extraction does work, is cost effective, and should be a viable option for some soil problems at the INEL.   | A-17                          |
| NC          | NC                     | David H. Nedrud  | If we can be of any assistance, call our office anytime. (208) 232-2034 Idaho is our home. Please keep cleaning up the site! Thank you DOE/EPA.   | Out-of-Scope/Not Responded To |
| W11-1       | 3                      | Stan Sorensen    | No comments at this time, but would like to receive a copy of the Record of Decision and Responsiveness Summary.  | A-6                           |
| W12-1       | 32                     | Robert Gates     | Your efforts have convinced me that you are doing the right thing to protect the people and the environment. Keep up the good work.   | A-17                          |
| W13-1       | 5                      | Allen Merritt    | Have you allowed for uncertainty?   | A-7                           |
| W13-2       | 38                     | Allen Merritt    | Incorporate some flexibility as this plan will almost certainly have to be modified at least slightly as the effort proceeds.   | A-20                          |
| W14-1       | 32                     | Robert M. Lugar  | In general, I agree with the preferred remedial action alternative presented in this proposed plan.   | A-17                          |
| W14-2       | 33                     | Robert M. Lugar  | Vapor vacuum extraction has been definitively shown to be effective at removing vapor-phase VOCs from the subsurface environment beneath the RWMC and is a fairly mature remediation technology (fairly high reliability of performance).<br><br>Catalytic oxidation is a logical choice for destruction of the VOCs once removed from the subsurface . . . | A-18                          |
| W14-3       | 35                     | Robert M. Lugar  | [T]here are presently commercially available trailer-mounted units which should be the most cost effective option (versus in-house design and construction).  | A-19                          |

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| W14-4       | 36                         | Robert M. Lugar  | On page 12, it states that "it is expected that no residual treatment wastes would be generated under Alternative 2. . . ." Keep in mind that eventually the catalyst will require either replacement or regeneration, and the associated catalyst waste disposal/replacement or regeneration costs. In addition, under catalytic oxidation, you will likely end up with a relatively small amount of hydrochloric acid (HCL) and/or a chloride salt, depending on the particular catalytic process used. There may also be small amounts of particulate matter collected by cyclone separator and/or HEPA filters upstream of VOC treatment component. | A-19               |
| W14-5       | 12                         | Robert M. Lugar  | Has any consideration been given to the effect of "drying out" (removing moisture) of the vadose zone as a result of the flow of large volumes of air through it. For example, will this phenomenon occur, and if so, to what extent, and will it have a positive or negative influence on VOC fate and transport in the subsurface environment? This does not effect the basic selection of the preferred alternative; however, it should be considered for future phase implementation and modeling.  | A-10               |
| W14-6       | 25                         | Robert M. Lugar  | I suggest that throughout all the phases, the number of extraction and monitoring wells be minimized to the extent possible. Although present day well construction techniques should protect the subsurface from inadvertently acting as conduits for contaminant transport to the deeper regions, any penetrations in the SDA are potential conduits.   | A-14               |

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| W14-7 | 13, 22          | Robert M. Lugar | <p>I suggest the agencies (DOE, IDHW, and EPA) consider restarting the existing VVE system at RWMC as soon as possible instead of leaving it idle until the additional five Phase I extraction/monitoring wells are installed and VVE systems for these wells are operational. At an estimated VOC extraction rate (based on the treatability study) of 1.754 pounds of VOCs/hour, 90% system availability, and a Phase I startup date of April 1995, approximately 13,832 pounds of VOCs can be removed from the SDA subsurface BEFORE the Phase I alternative is initiated if the existing system is restarted! The remedial objective is to remove subsurface VOCs to below cleanup goals . . . and we presently do not have a reliable prediction of how long this will take (from page 17 of the Proposed Plan), so why not get on with it as soon as possible rather than wait for a whole new set of paperwork, design reviews, safety analysis and reviews, etc. for the Phase I systems?</p> <p>The existing VVE system has proven itself to be safe and effective; all the necessary operating procedures, safety reviews, and monitoring procedures are in place, and trained personnel are available to operate the system. The disposal of the spent carbon adsorbers used on this system should not be an issue, since precedent has been set by the recent DOE-HQ approval of off-site disposal (at a licensed disposal facility) of spent adsorbers generated during the treatability study. Although we know now that carbon adsorption is not necessarily the optimum technology to treat the extracted VOC vapors from the RWMC, it is a widely accepted and utilized VOC vapor treatment method, and perfectly suitable until the Phase I wells/systems are operational.</p> <p>A tremendous amount of money has been invested in this existing system (especially if one includes the 1989/1990 tests and 1993 treatability tests), and we have only recovered an estimated 4,473 pounds of VOCs to date with it! Why not let it provide a better return on our tax dollar investment?</p> | A-10, A-13  |

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| W14-8       | 26                         | Robert M.<br>Lugar | <p>On page 17 it is stated that "the complexities of the subsurface environment and uncertainty associated with the modeling, make it difficult to predict how many wells will eventually be needed, how long it would take to achieve cleanup goals, and at what point the agencies could safely turn off the system." In light of this, I suggest the agencies consider expanding the benefit of the existing and future vapor vacuum extraction systems beyond regulatory driven risk reduction and remediation, and allow INEL, university, industry, and regulatory partners to use the VVE extraction and monitoring system(s) as a research "platform" to develop and test new technologies for subsurface characterization and modeling, vapor vacuum extraction and vapor treatment. Applied research and development activities using this platform would help us better understand the complexities of the subsurface, help us optimize the VVE process and be candidates for subsequent technology transfer to the private sector. Applied research and development activities associated with this concept would directly support the Department of Energy's and EPA's efforts to expand the development of environmental technologies, as directed by President Clinton's Environmental Technology Initiative and EPA's Technology Innovation Strategy (the former initiative specifically proposes to use the national laboratories as testing and evaluation centers in support of site characterization technology and use federal facility sites for full scale demonstrations of innovative remediation technologies). This platform would also support increased interaction between local universities, particularly in the geosciences and environmental engineering disciplines, and broaden our knowledge of VOC fate and transport in the vadose zone overlying the Snake River Plain aquifer.</p> | A-15               |

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| W14-9 | 21              | Robert M. Lugar | <p>Our subsurface vapor contaminant problem at RWMC is not unique; many other DOE sites (e.g., Hanford, DOD sites) and even USDA grain storage sites have discovered similar subsurface VOC contaminant plumes requiring VVE techniques to remove and treat the vapors. An INEL VVE and VOC treatment research program could not only help find the optimum treatment technology for DOE sites, but also assist others to develop, test, and apply emerging vapor removal and treatment technologies. VOC emission abatement, control, and treatment is the most rapidly growing component of the U.S. air pollution control industry. Many of the new emission control requirements of the recently reauthorized Clean Air Act are aimed specifically at controlling VOC vapor emissions from a variety of industry categories. Certain operations at DOE facilities will be impacted by these new VOC emission requirements. These regulatory drivers have created market pull for new and innovative VOC treatment technologies. Already the list of emerging technologies for VOC treatment is growing faster than any other pollution control area. Emerging vapor treatment technologies include catalytic oxidation, thermal oxidation, biological treatment, cryogenic techniques, solar oxidation, and electron beam destruction. On page 12 of this Proposed Plan it states " . . . biological and ultraviolet treatment would require further development in order to be a viable vapor treatment option for the large scale application. . . ." Why not let scientists and engineers from INEL/university/industry collaborate on this problem and use a sidestream of one of the extraction wells to address this technology development need?</p> | A-13        |

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| W14-1<br>0 | 14, 21          | Robert M. Lugar | The advantages of using the OCVZ as a basis for conducting subsurface, VVE and VOC treatment research is that the vapor plume is fairly well characterized, maintains a relatively stable concentration and composition, and will be continually monitored during the duration of VVE operations. Extracted vapor could be made available for bench or pilot scale treatment studies using a sidestream from the extraction well. The effects of natural barometric "pumping" could be studied, enhanced subsurface vapor tracer studies could be performed, and advanced subsurface contaminant fate and transport models could be calibrated against the monitored plume behavior.   | A-10, A-13  |
| W14-1<br>1 | 21              | Robert M. Lugar | The INEL has a noteworthy experience and capabilities base in this area (e.g., the design, testing, and optimization of the existing VVE system at RWMC), a cadre of subsurface modeling experts, the joint INEL/industry development of the BioCube (a biological VOC treatment technology), contaminant monitoring experts, engineering expertise, and state-of-the-art vapor analytical capabilities. In order for the INEL to survive and flourish into the next century, we must be attuned to opportunities to expand our knowledge base and develop new technologies. The OCVZ work performed so far has laid the foundation to build upon, and I would hope the agencies might recognize that the project has the potential to be much more than just a remediation project. | A-13        |
| W15-1      | 1               | John R. Horan   | The process of public input after the three agencies have met in secret to select the preferred alternate is seriously flawed. It's a farce to even consider that public comment can change a predetermined plan. A review of your CERCLA history in Idaho shows it has never been done. Community involvement and public comment, in its present form, only wastes additional taxpayer dollars which should be used on <i>real</i> risks rather than hypothetical <i>potential</i> risks of a low order.  | A-6         |

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| W15-2       | 9                      | John R. Horan    | Note that the main vapor plume has diffused about 100 feet over about 20 years. No mention has been made of a driving force that is expected to continue this expansion. I would expect the rate to decrease to zero as evidenced by 1960 field experiments.                         | A-8                           |
| W15-3       | 10                     | John R. Horan    | All wells as well (no pun intended) as ground surfaces breath during atmosphere pressure changes. Have any measurable organic contaminants been detected by air sampling at the SDA? This would be real data as compared to your use of an estimated hazard to hypothetical workers. | A-9                           |
| W15-4       | 11                     | John R. Horan    | How long has ID been monitoring the vadose zone?<br>What changes in the rate of vapor expansion were noted during the 1993 extraction?   | A-9                           |
| W15-5       | 41                     | John R. Horan    | No business enterprise would recommend the spending of 13-67 million dollars to possibly remove what has been conservatively overestimated as a marginally potential health problem with no noncarcinogenic health effects and acceptable carcinogenic risks for the public.         | A-21                          |
| W15-6       | NC                     | John R. Horan    | Note that every phase in this long sentence is taken directly, but out of original context, from your March 1994 statement.  | Out-of-Scope/Not Responded To |
| W15-7       | 39                     | John R. Horan    | No place have you indicated what amount or percentage of the offending vapor you expect to remove or is even a goal of the program "Believing you will remove the most significant concentration" is inadequate.   | A-20                          |
| W15-8       | 7                      | John R. Horan    | What is the degree of conservatism introduced in your risk analysis? 10, 100, or 10,000? The public should not have to search through pages 6-60 in the RI report for this vital information.  | A-8                           |
| W15-9       | 23                     | John R. Horan    | While it won't matter, my health and technical choice is Alternative 0.  | A-13                          |
| W15-10      | 43                     | John R. Horan    | Inadequate justification has been made to accelerate this applied experiment over a 2-year period.   | A-22                          |

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| W15-1<br>1  | 26                         | John R.<br>Horan | As a developmental research project you might be able to make a case to use existing equipment on other wells in sequence. You have not considered this lower keyed approach.  | A-15                          |
| W15-1<br>2  | 41                         | John R.<br>Horan | As a taxpayer I would prefer to see my money spent on saving lives (e.g., Boron Neutron Capture Therapy).  | A-21                          |
| W15-1<br>3  | NC                         | John R.<br>Horan | I cannot understand how you can get engineers and scientists to work on this type of pork barrel project which is basically unprofessional and unethical.  | Out-of-Scope/Not Responded To |
| W16-1       | 32                         | George<br>Leedom | From the presentation I heard at Moscow, Idaho, on April 21, 1994, I feel there is a potential problem and the action you propose of venting and destroying the contaminant appears to be very logical and thought out. I fully agree with your clean up proposal and the sooner the better. | A-17                          |
| W16-2       | 31                         | George<br>Leedom | I realize there is no getting to zero contamination at any practical cost and there is really no need to. Carbon tetrachloride, trichloroethylene, tetrachloroethylene, and I, II,-trichloroethylene contaminants have been with us for years and haven't shown been toxic at low levels.    | A-17                          |
| W16-3       | 3, 32                      | George<br>Leedom | Therefore, I feel that getting contaminations down to a reasonable level (minor risk) at reasonable cost is the best alternative. I feel that you have chosen the reasonable alternative. Thank you very much.   | A-6, A-17                     |



## **Appendix C**

### **Idaho National Engineering Laboratory Administrative Record File Index of the RWMC Vadose Zone Organics RI/FS Operable Unit 7-08 12/02/94**

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## **Appendix C**

# **Idaho National Engineering Laboratory Administrative Record File Index of the RWMC Vadose Zone Organics RI/FS Operable Unit 7-08 12/02/94**

### **ADMINISTRATIVE RECORD VOLUME I** **FILE NUMBER**

#### **AR3.1          SAMPLING AND ANALYSIS PLAN**

- ▲ Document #: EGG-WM-10175, Vol. 1  
Title: Sampling and Analysis Plan for the Organic Contamination in the Vadose Zone  
Author: Anderson, I.R.  
Recipient: N/A  
Date: 06/01/92
- ▲ Document #: EGG-WM-10175, Vol. 2  
Title: Sampling and Analysis Plan for the Organic Contamination in the Vadose Zone  
Author: Anderson, I.R.  
Recipient: N/A  
Date: 06/01/92

### **ADMINISTRATIVE RECORD VOLUME II**

#### **AR3.3          WORK PLAN**

- ▲ Document #: ERD-025-92  
Title: Organic Contamination in the Vadose Zone Remedial Investigation/Feasibility Study Work Plan  
Author: Lyle, J.L.  
Recipient: Pierre, W.; Nygard, D.  
Date: 02/27/92
- ▲ Document #: EGG-WM-10049  
Title: Final Work Plan for the Organic Contamination in the Vadose Zone  
Author: Chatwin, T.D.  
Recipient: N/A  
Date: 06/01/92

**FILE NUMBER****AR3.4 REMEDIAL INVESTIGATION**

- ▲ Document #: ER-VVED-076  
Title: Long Term Testing at OCVZ (OU-8), Possible Origin of Chloroform at the RWMC  
Author: Downs, W. C.  
Recipient: ARDC  
Date: 05/04/94

**AR3.10 SCOPE OF WORK**

- ▲ Document #: EGG-ERD-10376, Rev. 7  
Title: Scope Of Work for Organic Contamination in the Vadose Zone Remedial Investigation/Feasibility Study  
Author: Matthern, G. E.  
Recipient: N/A  
Date: 06/01/92

**AR3.12 RI/FS REPORTS**

- ▲ Document #: EGG-ER-10684, Vol. 1  
Title: Remedial Investigation/Feasibility Study Report For The Organic Contamination in the Vadose Zone - Operable Unit 7-08  
Volume I: Remedial Investigation  
Author: Duncan, F.L.  
Recipient: N/A  
Date: 12/01/93

**ADMINISTRATIVE RECORD VOLUME III**

- ▲ Document #: EGG-ER-10684, Vol. 2  
Title: RI/FS Report For The Organic Contamination in the Vadose Zone - Operable Unit 7-08  
Volume II: Remedial Investigation Appendices  
Author: Duncan, F.L.  
Recipient: N/A  
Date: 12/01/93

**ADMINISTRATIVE RECORD VOLUME IV**  
**FILE NUMBER**

**AR3.12 RI/FS REPORTS (continued)**

- ▲ Document #: EGG-ER-10684, Vol. 3  
Title: RI/FS Report For The Organic Contamination in the Vadose Zone -  
Operable Unit 7-08  
Volume II: Feasibility Study  
Author: Hamel, C.M.  
Recipient: N/A  
Date: 12/01/93
  
- ▲ Document #: OPE-ER-70-94  
Title: Transmittal of Final Inserts for the OCVZ Final RI/FS  
Author: Green, L.  
Recipient: Pierre, W.; Nygard, D.  
Date: 03/24/94

**AR3.17 RI/BRA REPORTS**

- ▲ Document #: AM/ERWM-ERD-092-92  
Title: Organic Contamination in the Vadose Zone Remedial  
Investigation/Feasibility Study  
Author: Lyle, J.L.  
Recipient: Pierre, W.; Nygard, D.  
Date: 10/09/92
  
- ▲ Document #: AM/ERWM-ERD-017-93  
Title: Transmittal of Draft Organic Contamination in the Vadose Zone Remedial  
Investigation and Baseline Risk Assessment Report  
Author: Lyle, J.L.  
Recipient: Pierre, W.; Nygard, D.  
Date: 03/03/93

**FILE NUMBER**

**AR3.18 ENVIRONMENTAL ASSESSMENT**

- ▲ Document #: 5620  
Title: NEPA - Environmental Assessment of Remediation of Organic Contamination in the Vadose Zone at the INEL  
Author: DOE-ID  
Recipient: Administrative Record  
Date: 02/25/94

**AR3.19 FINDING OF NO SIGNIFICANT IMPACT**

- ▲ Document #: 5619  
Title: Draft Finding of No Significant Impact for the Remediation of the Organic Contamination in the Vadose Zone  
Author: DOE-ID  
Recipient: N/A  
Date: 02/01/93

**AR3.20 TREATABILITY STUDY**

- ▲ Document #: AM/ERWM-ERD-085-92  
Title: Vapor Vacuum Extraction Treatability Study at the RWMC  
Author: Macdonald, D.W.  
Recipient: Nygard, D.  
Date: 09/11/92
- ▲ Document #: EGG-WM-10132  
Title: Final Work Plan for the OCVZ OU 7-08 Pilot Scale Treatability Study  
Author: Herd, M.  
Recipient: N/A  
Date: 03/01/94
- ▲ Document #: OPE-ER-69-94  
Title: Transmittal of the Draft Treatability Study Report for OCVZ (OU-7-08)  
Author: Green, L.A.  
Recipient: Pierre, W.; Nygard, D.  
Date: 03/25/94

**FILE NUMBER**

**AR4.3 PROPOSED PLAN**

- ▲ Document #: 5642  
Title: Proposed Plan for Organic Contamination in the Vadose Zone  
Author: INEL Community Relations  
Recipient: N/A  
Date: 03/01/94
- ▲ Document #: 5672  
Title: Transmittal of the Proposed Plan for Organic Contamination in the Vadose Zone, Idaho National Engineering Laboratory  
Author: Robison, S.A.  
Recipient: Burns, T.F.  
Date: 02/18/94

**AR5.1 RECORD OF DECISION**

- ▲ Document #: OPE-ER-152-94  
Title: Transmittal of the Draft Record of Decision for Organic Contamination in the Vadose Zone, RWMC, INEL  
Author: Lyle, J.L.  
Recipient: Pierre, W.; Nygard, D.  
Date: 07/11/94
- ▲ Document #: 5761  
Title: Record of Decision for Organic Contamination in the Vadose Zone, RWMC, INEL  
Author: DOE-ID, EPA, IDHW  
Recipient: N/A  
Date: 12/02/94

**AR7.8 OFFSITE WASTE SHIPMENTS**

- ▲ Document #: 5609  
Title: Approval of an EG&G Idaho Waste Shipment  
Author: Lytle, J.E.  
Recipient: Burns, T.F.  
Date: 11/22/93

**FILE NUMBER**

**AR7.9 SECRETARIAL POLICY**

- ▲ Document #: OPE-ER1-056-94  
Title: Changes in the Environmental Restoration (ER) Program Due To The Secretarial Policy on the National Environmental Policy Act (NEPA)  
Author: Green, L.A.  
Recipient: Addressees  
Date: 07/13/94

**AR10.4 PUBLIC MEETING TRANSCRIPTS**

- ▲ Document #: 5703  
Title: Public Meeting Transcripts for the Organic Contamination in the Vadose Zone (OCVZ)  
Author: Ecology and Environment, Inc.  
Recipient: N/A  
Date: 05/24/94

**This document can be found in the INEL OU 8-07 Administrative Record Binder Volume No. VIII**

**AR10.6 PRESS RELEASES**

- ▲ Document #: 5640  
Title: DOE Seeks Public Comment on Organic Contamination in the Vadose Zone  
Author: N/A  
Recipient: N/A  
Date: 03/01/94

**AR12.1 EPA COMMENTS**

- ▲ Document #: 5358  
Title: Comments for Draft Work Plan for Organic Contamination in the Vadose Zone RI/F Study, Operable Unit 7-8, 12/91  
Author: Pierre, W.  
Recipient: Lyle, J. L.  
Date: 02/26/92



**FILE NUMBER**

**AR12.1 EPA COMMENTS (continued)**

- ▲ Document #: 5674  
Title: INEL RWMC - Draft Final Work Plan for The Organic Contamination in the Vadose Zone, Operable Unit 7-08 Focused Remedial Investigation / Feasibility Study, Dated May 1992  
Author: Nearman, M.J.  
Recipient: Macdonald, D.  
Date: 05/21/92
- ▲ Document #: 5357  
Title: INEL WAG 7 - Draft RI Report for the Organic Contamination in the Vadose Zone (OU 7-08), February 1993  
Author: Nearman, M.J.  
Recipient: Macdonald, D.  
Date: 04/29/93
- ▲ Document #: 5613  
Title: EPA Comments on the Draft RI/FS Report for the Organic Contamination in the Vadose Zone OU 7-08, 3 volumes, dated August 1993  
Author: Nearman, M.J.  
Recipient: Macdonald, D.  
Date: 11/04/93
- ▲ Document #: 5628  
Title: EPA Comments: INEL OU 7-08 Draft Final RI/FS Report  
Author: Jones, E.  
Recipient: Green, L.  
Date: 02/14/94
- ▲ Document #: 5707  
Title: EPA Concurs: Preliminary Design Summary Report for OCVZ, RWMC, INEL  
Author: Pierre, W.  
Recipient: Green, L.  
Date: 05/18/94

**FILE NUMBER**

**AR12.1 EPA COMMENTS (continued)**

- ▲ Document #: 5765  
Title: EPA Comments on the Record of Decision for the OCVZ  
Author: Wilkening, R.M.  
Recipient: Green, L.  
Date: 08/22/94

**AR12.2 IDHW COMMENTS**

- ▲ Document #: 5675  
Title: Technical Review Comments for Draft Final Focused RI/FS Work Plan for Organic Contamination in the Vadose Zone  
Author: Nygard, D.  
Recipient: Lyle, J. L.  
Date: 05/22/92
- ▲ Document #: 5696  
Title: Review of DOE-ID Letter Dated 09/11/92 Providing Air Emissions Information for Meeting the Substantive Requirements of Idaho's Air Quality Regulations, VVE Treatability Study at the RWMC  
Author: Nygard, D.  
Recipient: Lyle, J. L.  
Date: 10/16/92
- ▲ Document #: 5355  
Title: Review of EG&G Letter Dated November 9, 1992 Providing Air Emissions Information for the Pilot Scale Treatability Study, Operable Unit (OU 7-08) at the RWMC  
Author: Nygard, D.  
Recipient: Lyle, J. L.  
Date: 11/30/92
- ▲ Document #: 5356  
Title: Review Comments for Draft RI Report for the Organic Contamination in the Vadose Zone, (EGG-ER-10684)  
Author: Nygard, D.  
Recipient: Macdonald, D.  
Date: 04/21/93

**FILE NUMBER**

**AR12.2 IDHW COMMENTS (continued)**

- ▲ Document #: 5571  
Title: Technical Review Comments for the Draft Remedial Investigation /  
Feasibility Study Report for the Organic Contamination in the Vadose Zone  
Operable Unit 7-08  
Author: Koch D.F.  
Recipient: Williams, A.C.  
Date: 11/03/93
- ▲ Document #: 5708  
Title: Confirmation of OCVZ Well Installation Modification  
Author: Koch, D.  
Recipient: Green, L.  
Date: 05/16/94
- ▲ Document #: 5766  
Title: IDHW Review of the Record of Decision - Declaration of OCVZ - OPE-  
ER-152-94  
Author: Koch, D.  
Recipient: Green, L.  
Date: 08/26/94

**AR12.3 DOE RESPONSE TO COMMENTS**

- ▲ Document #: ERD1-081-92  
Title: Scope for Organic Contamination in the Vadose Zone Remedial  
Investigation/Feasibility Study  
Author: Lyle, J.L.  
Recipient: Pierre, W.; Nygard, D.  
Date: 03/27/92
- ▲ Document #: 5588  
Title: Resolution on the Comments for the Draft Remedial Investigation Report  
for the Organic Contamination in the Vadose Zone (Operable Unit 7-08),  
February 1993  
Author: EG&G Idaho, Inc.  
Recipient: IDHW  
Date: 02/01/93

**FILE NUMBER**

**AR12.3 DOE RESPONSE TO COMMENTS (continued)**

- ▲ Document #: OPE-ER-004-94  
 Title: DOE Response to IDHW & EPA Comments on the Draft RI/FS for Organic Contamination in the Vadose Zone OU 7-08  
 Author: Green, L.  
 Recipient: Pierre, W.; Nygard, D.  
 Date: 01/13/94
- ▲ Document #: OPE-ER-267-94  
 Title: DOE Response to IDHW & EPA Comments on the Draft Record of Decision (ROD) for Organic Contamination in the Vadose Zone (OCVZ) OU 7-08 at the RWMC, INEL  
 Author: Green, L.  
 Recipient: Pierre, W.; Nygard, D.  
 Date: 09/30/94

**AR12.4 EXTENSION REQUESTS AND APPROVALS**

- ▲ Document #: ERD1-118-92  
 Title: Extension Of Comment Period For Organic Contamination in the Vadose Zone (OCVZ) Remedial Investigation/Feasibility Study  
 Author: Lyle, J.L.  
 Recipient: Pierre, W.; Nygard, D.  
 Date: 03/27/92

This Administrative Record Index is complete.

Patti Kroupa 12/13/94  
 DOE-ID WAG Manager Date

Amy Smith for Doug Kubina 12/13/94  
 LITCO WAG Manager Date